in the ICS group, the difference in mortality rate was not statistically significant (Hazard Ratio: 0.77 CI: 0.52; 1.15). However, there was a significant quality-of-life benefit in favor of ICS. **CONCLUSIONS:** Despite a lack of significance in survival benefits, joint considerations of quality of life and survival indicate that ICS could be considered potentially cost-effective. Imputation methods can be employed to address missing data issues when the extent of missingness is not too extreme.

PCO4

EPISODES OF RESPIRATORY CARE FOR MANAGED CARE PATIENTS WITH COPD: ASSESSING THE ECONOMIC BURDEN

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OBJECTIVES: The study objective was to use administrative claims to create episodes of acute respiratory care as a means of better understanding the economic burden of acute treatment of COPD. **METHODS:** Respiratory-related medical (ICD-9-CM 480.xx–519.xx) and pharmacy claims were extracted from a managed care database for all patients 30 years of age or more who were diagnosed with COPD (ICD-9-CM 491.xx, 492.xx, and 496.xx) between 1997 and 2001. Acute respiratory-related services were categorized as inpatient treatment, emergency room (ER) treatment, or an office visit combined with an antibiotic or oral steroid dispensed within three days of the visit. Episodes of care were created by continuously combining acute medical claims until a gap of 14 days or longer were found between claims. Acute services after such a gap began a new episode. Each patient was tracked longitudinally and all episodes during the study period were included. Study measures included service location, duration, and health plan payments (in 2002 $US). **RESULTS:** The average age of the 164,566 patients was 68 years, and 50% were male. Patients received more than 510,000 unique acute respiratory medical services; 37% were inpatient, 22% ER, and 41% office visits. These services were combined to create 385,352 episodes (1.3 unique medical services per episode), of which 45% involved inpatient care. The average duration of episodes involving hospitalization was 10.6 days, with a mean payment of $12,661. These episodes lasted 2.6 days longer and payments were 12% more than individual hospital stays. Approximately 10–15% of outpatient episodes involved multiple ER or office visits. Mean payments for office visit and ER episodes, including acute drug costs, were $231 and $841, respectively. **CONCLUSIONS:** Combining individual claims for acute respiratory services into episodes of care provide a more comprehensive estimate of the costs of respiratory exacerbations for patients with COPD.

PCO5

ECONOMIC BURDEN OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) IN A STATE HEALTH INSURANCE PROGRAM

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OBJECTIVE: Chronic obstructive pulmonary disease (COPD) is the fourth-leading cause of death in the United States and accounts for about 14 billion dollars annually. This study assesses the economic burden of COPD in a state health insurance program in terms of medical resources and pharmacotherapy from a payer perspective. **METHODS:** Outpatient, hospital and emergency department (ED) claims with a primary ICD-9 code for chronic bronchitis (491.xx), emphysema (492.xx), and chronic airways obstruction (496.xx) dated between July 1, 2001 and June 30, 2003 were extracted from the claims database of a state health insurance program. Unique recipient identifiers obtained from these claims were then used to extract COPD-related prescription claims. Payer reimbursements were used to calculate costs. Rates of use of maintenance medications was assessed for the following therapeutic classes: 1) use of any inhaled anti-inflammatory therapy (inhaled corticosteroids, cromolyn, nedocromil, and 2) use of "other" maintenance drugs such as long-acting beta-agonists, leukotriene modifiers, anticholinergics, and theophylline agents. **RESULTS:** Overall, COPD prevalence was 52.2/1000 recipients. Of the 7165 recipients identified with COPD, 11.8% (N = 848) received inhaled anti-inflammatory drugs, and 19.4% (N = 1389) received "other" maintenance medications for COPD. The hospitalization rate was 7.9 hospitalizations/10,000 recipients, at a mean cost of $1322 (SD = $1025) per visit per recipient (pvpr). The rates of outpatient and ED use were 112 outpatient visits/1000 recipients, and 56 ED visits/10,000 recipients, respectively. The mean cost pvpr for outpatient and ED use was $51 (SD = $72) and $69 (SD = $80), respectively. The total COPD-related annual average expenditures to the payer were $10,051,244 of which prescription use accounted for 95%, followed by outpatient use (4%), hospitalizations (0.7%), and ED use (0.3%). **CONCLUSIONS:** COPD exerted a significant burden on the payer. Although prescription use accounted for the most dollars, hospital use and costs were significantly lower than national estimates.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

CHRONIC OBSTRUCTIVE PULMONARY DISEASE—Quality Of Life Studies

PCO6

HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH CHRONIC RESPIRATORY DISEASE

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OBJECTIVE: Chronic respiratory illnesses such as asthma and chronic obstructive pulmonary disease (COPD) not only impact economic outcomes, but they also impact patients' health-related quality of life (HRQL). The objective of this study was to assess the HRQL in patients with asthma and COPD. **METHODS:** All employees receiving health benefits through a state health insurance program constituted the study population. Recipients having medical claims with a primary ICD-9 code for asthma (493.xx), chronic bronchitis (491.xx), emphysema (492.xx), or chronic airways obstruction (496.xx) between July 1st, 2001 and June 30th, 2003, were selected. These patients were classified as having asthma-only, COPD-only, or having both asthma and COPD, based on ICD9 codes. These patients were mailed the St. George's Respiratory Questionnaire (SGRQ), which has been validated for measuring HRQL in patients with asthma as well as COPD. The SGRQ consists of 3 subscales: symptoms, activity, and impacts, as well as a summary score, each ranging from 0 to 100, with higher scores indicating worse HRQL. T-tests and ANOVAs were used to compare HRQL between the 3 groups. **RESULTS:** Overall prevalence of chronic respiratory disease was 69.9/1000 recipients (asthma n = 1493; COPD n = 7165; both n = 940). Overall survey response rate (RR) was 22.6% (asthma

RR = 25.1%; COPD RR = 16%; both RR = 24%). The summary HRQL score for recipients with both asthma and COPD was 43.8 ($p < 0.0001$), as compared to 36.4 for the COPD-only and 33.3 for the asthma-only groups. These differences persisted for each of the 3 subscales, with recipients having both asthma and COPD experiencing worse HRQL than those with asthma-only or COPD-only. **CONCLUSIONS:** Increase in disease severity (as indicated by the presence of both asthma and COPD as compared to either disease by itself) was associated with statistically as well as clinically significant worsening of HRQL.

EAR/EYE/SKIN DISEASES OR DISORDERS

EAR/EYE/SKIN DISEASES OR DISORDERS—Clinical Outcomes Studies

PES1

PATIENTS' PERSISTENCE AND ADHERENCE WITH GLAUCOMA THERAPY: A LONGITUDINAL RETROSPECTIVE DATABASE ANALYSIS OF OPHTHALMIC LIPIDS

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OBJECTIVES: This study examined the persistence and adherence for patients using latanoprost, travoprost, and bimatoprost across multiple health plans over 12 months. **METHODS:** Glaucoma patients were identified from an employer-based database covering 1.8 million lives in 40 health plans. Patients with a glaucoma medical claim and a pharmacy claim for latanoprost, travoprost, or bimatoprost from September 31, 2001 through March 31, 2002 were eligible for study entry. Continuous eligibility was required 180 days prior to the index date, defined as the date of the first prescription claim for an ophthalmic drug of interest, with no evidence of ophthalmic drug use during that time. These patients were defined as "new therapy starts". Persistence at 12 months and number of days of adherence was determined for new starts with at least 3 months of therapy following the index date. Due to potential inconsistencies with days supply reporting at the pharmacy level, a clinical algorithm was developed to compute days on therapy. **RESULTS:** At total of 3822 glaucoma patients were identified with at least one claim for latanoprost, travoprost, or bimatoprost. Patients were on average 73.1 years (SD = 10.1, range = 15–88) and 53.1% female. A total of 2666 (69.8%) completed the first three months. A total of 70.1% were persistent with therapy at 12 months and were adherent 83.1% of the time. Using the quantity dispensed and the number of days between refills yielded 8 days of therapy per 1-mL of ophthalmic solution. The mean number of days on therapy for bimatoprost was significantly greater than latanoprost ($p < 0.05$). **CONCLUSIONS:** This retrospective database analysis assessed persistence and adherence for glaucoma patients using latanoprost, travoprost, and bimatoprost for 12 months. Although most patients were persistent and adherent to their therapy for at least 3 months and then at 12 months there may still be opportunities to improve persistence and adherence with these important ophthalmic therapies.

PES2

MEDICATION ADHERENCE RATES AND DISEASE SEVERITY CHANGES IN PSORIASIS

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OBJECTIVE: It is a commonly known fact among physicians that patients are non-adherent to medication regimens. In dermatology, there has been little study into the issue of medication non-adherence. This study examined trends in adherence behavior (measured electronically) to topical medication regimen over time in patients with psoriasis enrolled in a clinical study. Additionally, the association between adherence behavior and changes in severity of psoriasis was explored. **METHODS:** Twenty four subjects with psoriasis that were already enrolled in an 8-week study with salicylic acid and topical tacrolimus ointment combination therapy were given the salicylic acid in a bottle with the Medication Event Monitoring System (MEMS) cap. Electronic medication adherence was downloaded from the cap to a computer at each follow up visit. The primary outcome was the difference in the change from baseline in the disease severity (sum score of erythema, scale and thickness scores). **RESULTS:** Over the 8 week period the overall adherence rates declined by 50% from 75.6% to 51%. A significant correlation was found between increased adherence and decreased disease severity summary score in the first week of treatment (Pearson's rho = –0.42, $p = 0.02$), after accounting for treatment effect. This relationship did not persist after week 1. **CONCLUSIONS:** The precipitous decrease in psoriasis medication adherence rates, even in clinical study settings is cause for concern. Benefits from these medications may decrease as a result of decreased adherence to prescribed regimens over time.

PES3

PRIOR AUTHORIZATION OF TOPICAL RETINOIDS NEEDED? EVIDENCE FROM OUTPATIENT US NATIONAL PRACTICE DATA

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OBJECTIVE: Fears of potentially costly use of topical retinoids for cosmetic treatment of photodamaged skin has resulted in many managed care organizations placing prior authorization requirements on this class of medications. The purpose of this investigation was to examine whether prescribing patterns of a nationally representative sample of US physicians shed light on potential inappropriate use of topical retinoids. **METHODS:** A retrospective, cross-sectional study of data from the National Ambulatory Medical Care Survey (1996–2000) was used to determine the impact of patient diagnosis of acne on the probability of retinoid prescription were examined in weighted multivariate logistic regression models. **RESULTS:** Topical retinoids were prescribed in 0.4% of the 3.67 billion visits for any diagnosis from 1996–2000, and in nearly 31% of the visits for 38.7 million visits for acne. The study found that there was negligible prescription of topical retinoids for non-acne related conditions (Risk Ratio [RR] for topical retinoid prescription with acne diagnosis: 58.8, 95% CI: 33.4, 103.7). This finding held when individual retinoids (tretinoin and adapalene) were examined separately. Clear age-related prescription trends were observed, with significant decrease in prescriptions beyond the teen years. **CONCLUSIONS:** The data do not support a need for general prior authorization of topical retinoids. Prior authorization requirements for topical retinoids may not be necessary in young patients, given the very small probability of non-acne related use. In older patients, prior authorization, if needed at all, should focus only on those topical retinoids for which there is evidence of efficacy in treatment of cosmetic photoaging.